

# **What's Your Angle? - Classifying And Measuring Angles**

## **Brief Overview:**

**Students will identify and create acute, right, obtuse and straight angles. Use of the protractor to measure angles will be introduced and practiced with real and virtual manipulatives. Throughout the lessons students will begin with concrete experiences and move toward authentic application of measurement.**

**NCTM Content Standards:  
Measurement - Angles**

**Grade/Level:  
Grade 4**

**Duration/Length:  
3 days for 60 – 70 minutes daily**

## **Student Outcomes:**

**Students will:**

**Understand measurable attributes of objects and the units, systems, and processes of measurement**

- **Identify angles as acute, right, obtuse or straight  
Apply appropriate techniques, tools and formulas to determine measurements**
- **Measure the size of angles to the nearest five degrees using a protractor**

## **Materials and Resources:**

### **Lesson 1**

- **Angles pre-assessment, Student Resource 1**
- **Angles pre-assessment answer key, Teacher Resource 1**
- **Sir Cumference and the Great Knight of Angleland: A Math Adventure by Cindy Neuschwander - one copy**
- **Chart paper**
- **Sorting angles, Student Resource 2**
- **Overhead of Sorting Angles, Student Resource 2**
- **Sorting Angles answer key, Teaching Resource 2**
- **“Judy” student clocks – one per student**
- **Teacher “Judy” clock or overhead clock**
- **Plain white paper**
- **Index cards**
- **Student Resource 3, “Clock Angles”**
- **Student Resource 4 “How Many Angles Do You See?”**
- **Teacher Resource 3- Answer Key- “How Many Angles Do You See?”**

- Student Resource 12 Baseball Angle Search (optional)
- Teacher Resource 10 Baseball Angle Search Answer Key

## Lesson 2

- Right Angles Soccer Search, Student Resource 5
- Right Angles Soccer Search Answer Key, Teacher Resource 4
- Sir Cumference and the Great Knight of Angleland: A Math Adventure by Cindy Neuschwander - one copy
- Paper protractor, Student Resource 6
- Protractors – one per student or AngLegs with snap-on protractor
- Overhead protractor
- Measuring Angles with a Protractor, Student Resource 7
- Measuring Angles with a Protractor Answer Key, Teacher Resource 5
- Measuring Angles with a Protractor Re-teach, Student Resource 8
- Measuring Angles with a Protractor Re-teach Answer Key, Teacher Resource 6
- Steps to Measuring Angles with a Protractor,
- Student “Write and Wipe” boards or chalkboards, Teacher Resource 7
- Wipe off markers or chalk
- Teacher “Write and Wipe” board or chalkboard

## Lesson 3

- Protractor Entry Pass, Student Resource 9
- Protractor Entry Pass Answer Key, Teacher Resource 8
- Computers with internet access
- Digital Data Projector (to project computer images onto large screen)
- Angles on the Internet Start Up page Student Resource 10
- Blank paper
- Angles post-assessment, Student Resource 11
- Angles Post-Assessment Answer Key, Teacher Resource 9

Development/Procedures:

## Lesson 1

### Pre-Assessment

- Use the Angles Pre-assessment, Student Resource 1, to assess student knowledge of types of angles and how to measure them. Give the pre-assessment to students several days before start of unit to plan instruction accordingly. Answer key can be found on Teacher Resource 1.

## Launch

- Read the book Sir Cumference and the Great Knight of Angleland: A Math Adventure by Cindy Neuschwander to the class.

#### Teacher Facilitation

- Engage students in a discussion of the different attributes of the angles described in the book. Ask students what they noticed about the angles? What similarities did they see? Any differences? How were angles used in the story? Have students draw angles from the story on a piece of chart paper.
- Have students classify the angles using the attribute of angle size (i.e., small angles, medium, large, wide ... students determine the criteria).
- Display, describe and define the different types of angles as acute (less than  $90^\circ$ ) right (equal to  $90^\circ$ , the letter "L"), obtuse (greater than  $90^\circ$  and less than  $180^\circ$ ) and straight (equal to  $180^\circ$ , straight line).
- Identify angles of objects in the classroom (i.e., poster - right angle corner, floor tile - right angle corner, door - straight angle). Ask for student observations of angles in the classroom.

#### Student Application

- Put students in groups of three. Students will take turns making angles on the floor, as instructed by the teacher, using their bodies as the sides (rays). Two students will make the angle the teacher has called out (acute, right, obtuse, straight), and the third student observes and checks for accuracy.
- With students at their seats, call out different types of angles that students create using their arms (right, acute, obtuse, and straight).
- Distribute Student Resource 2, Sorting Angles, which students complete as a small group. Check as a class.
- Distribute "Judy" clocks. Use teacher "Judy" clock to demonstrate different sizes of angles. Instruct students that the size of an angle is a measurement of rotation and is measured in degrees.

- Confirm that a clock hand that moves from the 12, all the way around the clock and back to 12, has rotated  $360^\circ$ , the number of degrees in a circle.
- Have children set their clocks to 12:00. Direct students to use their individual clocks to display a right angle. Ask where the hands are on the clock (12 and 3). Repeat procedure with a straight angle, obtuse and acute.
- Distribute plain paper. Instruct students to fold paper into four sections. Label the sections: Acute, Right, Straight, and Obtuse.
- Students are to use their clock to create at least 8 examples of each different type of angle, recording the angles as the time. (i.e. Obtuse 1:45) These may be recorded on Student Resource 3.
- Possible homework practice, Baseball Angle Search, Student Resource 12.

#### Embedded Assessment

- Observe student groups to assess which students are creating accurate acute, right, obtuse and straight angles.
- Observe individuals as they use their arms to create angles, assessing which students are creating accurate acute, right, obtuse and straight angles.
- Check student group work on Student Resource 2. Answer key can be found on Teacher Resource 2.
- Check student clock sheet, Student Resource 3.

#### Reteaching

- Pull students demonstrating difficulty into a small group. Give each student an index card. Instruct students to set a specific time on their clock as you model. Demonstrate using the right angle (corner) of the index card to determine whether the angle on the clock is equal to a right angle, greater than (obtuse) or less than (acute). Show students how to record the time on Student Resource 3, "Clock Angles", by drawing the hands on the clock. Repeat procedure using different times on the clock.

### Extension

- Pull group of students demonstrating quick mastery into a small group. Give each student a copy of Student Resource 4, "How Many Angles Do You See?" Students may work independently or in partners to find as many acute, right, obtuse and straight angles as they can. Answer key can be found on Teacher Resource 3.

### Lesson 2

#### Pre-Assessment

- Give Student Resource 5, "Right Angle Soccer Search" to students. Students are to draw a box at each right angle on the soccer field. Answer key can be found on Teacher Resource 3.

#### Launch

- Remind students of the story Sir Cumference and the Great Knight of Angleland: A Math Adventure by Cindy Neuschwander. Ask students what they recall about the "circular medallion"; i.e. what it looked like, how it was used, and why it was used.

#### Teacher Facilitation

- Place the overhead protractor on the projector. Tell students that this object that was called the "circular medallion" is actually called a protractor.
- Provide each student with a protractor and Student Resource 6, "Paper Protractor". Direct students to carefully observe the protractor to record anything they notice about the protractor - shape, markings, patterns, etc.
- Have students share observations. Be sure students have noticed the following attributes: the first line, at zero, is not along the bottom edge of the protractor; the numbers increase by tens from zero to 180 in both directions; there are ten small lines between each number; the sum of the two labeled angles is equal to 180; the vertex point is in the lower middle part of the protractor.

- Draw an angle on a transparency. Demonstrate the steps to measuring angles with a protractor (or AngLegs snap-on protractor).
  1. Find the vertex on the straight edge of the protractor.
  2. Place the hole, or vertex in the middle of the straight edge on the protractor, over the vertex of the angle you are measuring.
  3. Line up the zero on the straight edge of the protractor with one of the sides of the angle.
  4. Find the place where the second side of the angle intersects the curved edge of the protractor.
  5. Read the number that is written on the protractor at the point where the line intersects. Be sure to start from zero and skip count by 10's, then 5's. This is the measure of the angle in degrees (to the nearest 5).

#### Student Application

- Give students Student Resource 7, "Measuring Angles with a Protractor". Guide students through the steps to measure angles with a protractor, using the angles on Student Resource 7. Answer key can be found on Teacher Resource 5.
- After each measure, have students identify the angle as acute, right, obtuse or straight.
- Do the first few together, gradually releasing the task to allow students to measure the angles independently. Be sure students measure in degrees and identify the type of angle.

#### Embedded Assessment -

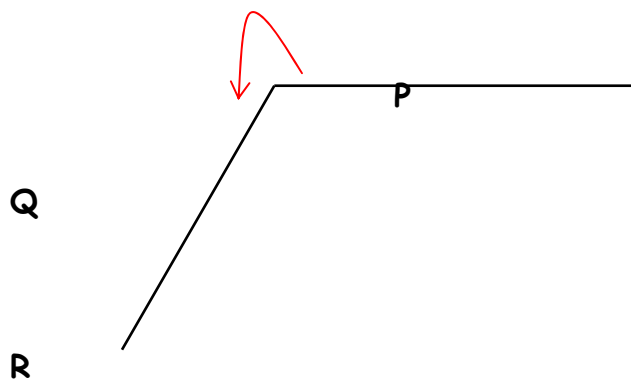
- Observe and check completion of Student Resource 5, "Right Angle Soccer Search" paper.
- Observe and check completion of Student Resource 7, "Angles to Measure" paper.

#### Reteaching

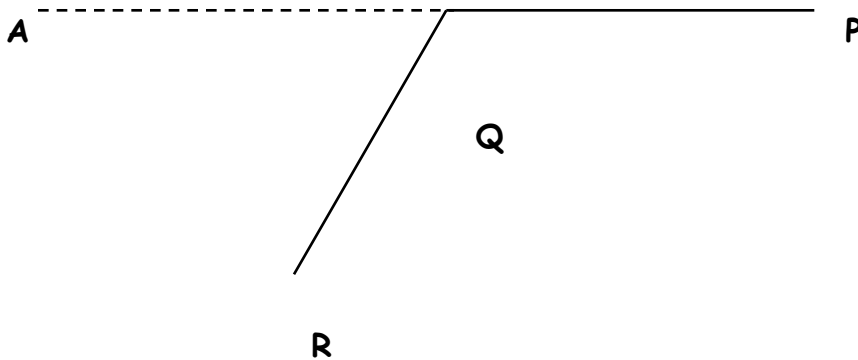
- Students demonstrating difficulty can work in a small group. Present chart (Teacher Resource 6, Steps for Measuring Angles Using a Protractor). Using Student Resource 8, ask students to tell you what to do, one step at a time (following the steps on Teacher Resource 6), to measure each angle on the page. Protractors are on top of the angles on this page to scaffold for learner success. Answer key can be found on Teacher Resource 7.

### Extension - Naming Angles and Reflex Angles

- Separate a group of students demonstrating mastery into a small group. Tell students that an angle is named by using the names of the points on the rays, with the name of the vertex in the middle. The symbol used to represent the angle is  $\angle$ . For angles the central letter is where the vertex is. For example, when you see "ABC is  $45^\circ$ ", then the point "B" is where the vertex is.
- Show students how to write the angle name,  $\angle ABC$ .
- Draw several angles on the "Write and Wipe" board, one at a time, labeling the vertex and end points. Students will write the angle name on their "Write and Wipe" boards.
- Tell students that an angle greater than  $180^\circ$  and less than  $360^\circ$  is called a reflex angle.
- Draw angle PQR on the white board and draw the arrow to indicate the reflex angle:



- Ask students if there is any way to determine the measurement of a reflex angle. Students may say measure the acute angle and subtract the degrees from  $360^\circ$  or adding the acute angle to  $180^\circ$ . Try their suggestions as a group.
- Demonstrate using a protractor to measure a reflex angle as follows:  
To measure the reflex angle PQR, place the base of the protractor on PQ, extend the arm PQ to A to form angle PQA that is a straight angle.



Then measure the size of the angle  $AQR$  and add  $180^\circ$  (the straight angle  $AQP$ ).

$$\text{Reflex } \angle PQR = \text{Straight angle} + \angle AQR$$

$$= 180^\circ + 45^\circ$$

$$= 225^\circ$$

- Students may use one of the methods to measure the reflex angles from Student Resource 7, Measuring Angles with a Protractor.



### Pre-Assessment

- Give students Entry Pass, Student Resource 9
- Student work will be tiered based on the pre-assessment results. Students with all three correct will work at level 2, and students with two or less correct will work at level 1. Answer key can be found on Teacher Resource 8.

### Launch

- Tell students they will be using Internet websites to continue their work with angles. It is preferable for each student to work at his or her own computer. The teacher will need to make sure each student has access to Student Resource 10, the Internet Start Up page.

### Teacher Facilitation

- Tell students the level at which they will begin their work; Level 2 or 1.
- Bring up the Angles on the Internet Start Up page, Student Resource 10 on a digital data projector.
- Explain the directions to students, having them write on their recording sheet the level at which they will begin their work.
- Have students log on to the computer and get to the start up page.
- Go over the organization of the start up page.
- Explain to students that to get to the web activity they will need to move the mouse over the highlighted website, hold down the Ctrl key and click the mouse.
- Bring up the page

<http://www.amblesideprimary.com/ableweb/mentalmaths/protractor.html>

- Click on the "Teacher Controls" to show students the activities.
- Select "Up to 90 degrees in tens."
- Demonstrate how to move the protractor by clicking on it and dragging.
- Point out how to place the vertex of the protractor on the vertex of the angle.
- Demonstrate how to rotate the protractor by clicking on the arrow keys above the "Turn the Protractor" title.

- Show students how to enter the angle measurement in the box and click the check button to check their answer.
- Have students bring up the same page and do the same activity to practice using the controls. Repeat a few times until students seem proficient.
- Distribute Angles on the Internet Start Up page, Student Resource 10 and explain how to complete the paper.
- Give students a brief overview of the activities.

#### Student Application

- Students will work independently (or in pairs) on their level, classifying and measuring angles.
- Students will answer questions on Student Resource 10.
- If students complete their level, they need to show their work to the teacher before moving up to the next level.
- Save 20 minutes at the end of the activities for students to complete the Angles Post-assessment, Student Resource 11. Answer key can be found on Teacher Resource 9.

#### Embedded Assessment

- Check Entry Passes, Student Resource 9
- Observe students working on Internet angle measuring activities.
- Check Internet Angles recording sheets (blank paper).

#### Reteaching

- Group students demonstrating difficulty around a small group of computers.
- Have students return to the Internet Angles Start Up page, Student Resource 10, the Extra Support section.
- Guide students to the website:  
[www.hittingthetarget.com/hittingthetarget.php](http://www.hittingthetarget.com/hittingthetarget.php) the Snooker game.
- Go through the information as a group, reinforcing the use of the protractor and angle types.
- Have students discuss what they need to do and explain why. When there is agreement, have students complete the action and evaluate why their result was correct or incorrect (and ways to correct it).

### Extension

- Group students demonstrating mastery around one computer. Bring up the Internet Angles Start Up page, Student Resource 10.
- Go to the Enrichment section, Burst the Balloons activity: <http://www.lgfl.net/lgfl/leas/haringey/web/teachers%20section/KS2/ICT/Links%20&%20Resources/documents/clowns.swf>
- Go over the directions with students. In this activity students use angles and distance to maneuver the clown car around a maze bursting balloons to earn points, while avoiding accidents.
- Have students decide on the angle and distance as a group. Students take turns typing in the numbers.
- Discuss the results and ways to correct any errors. Repeat until students are proficient. They may then try the activity independently or in pairs at computers.

### Summative Assessment:

- Students will complete the Angles Post-Assessment, Student Resource 11. On this assessment students will identify angles as acute, right, obtuse or straight. They will also measure angles using a protractor. Students will communicate mathematically their understanding through a Brief Constructed Response.

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## Angles Pre-Assessment

Name \_\_\_\_\_ Date \_\_\_\_\_

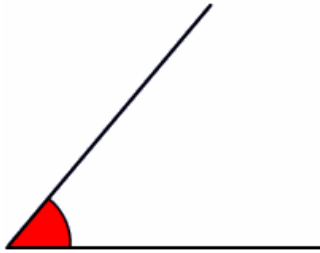
Directions: Match the picture of the angle with the name

A.



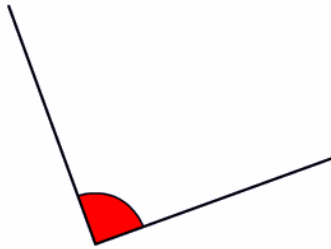
1. \_\_\_\_\_ Right Angle

B.



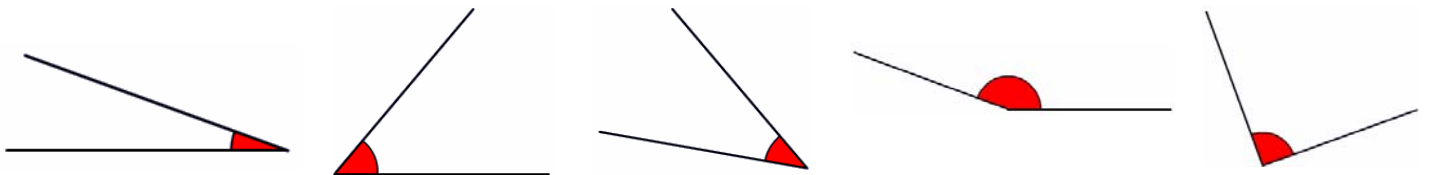
2. \_\_\_\_\_ Obtuse Angle

C.



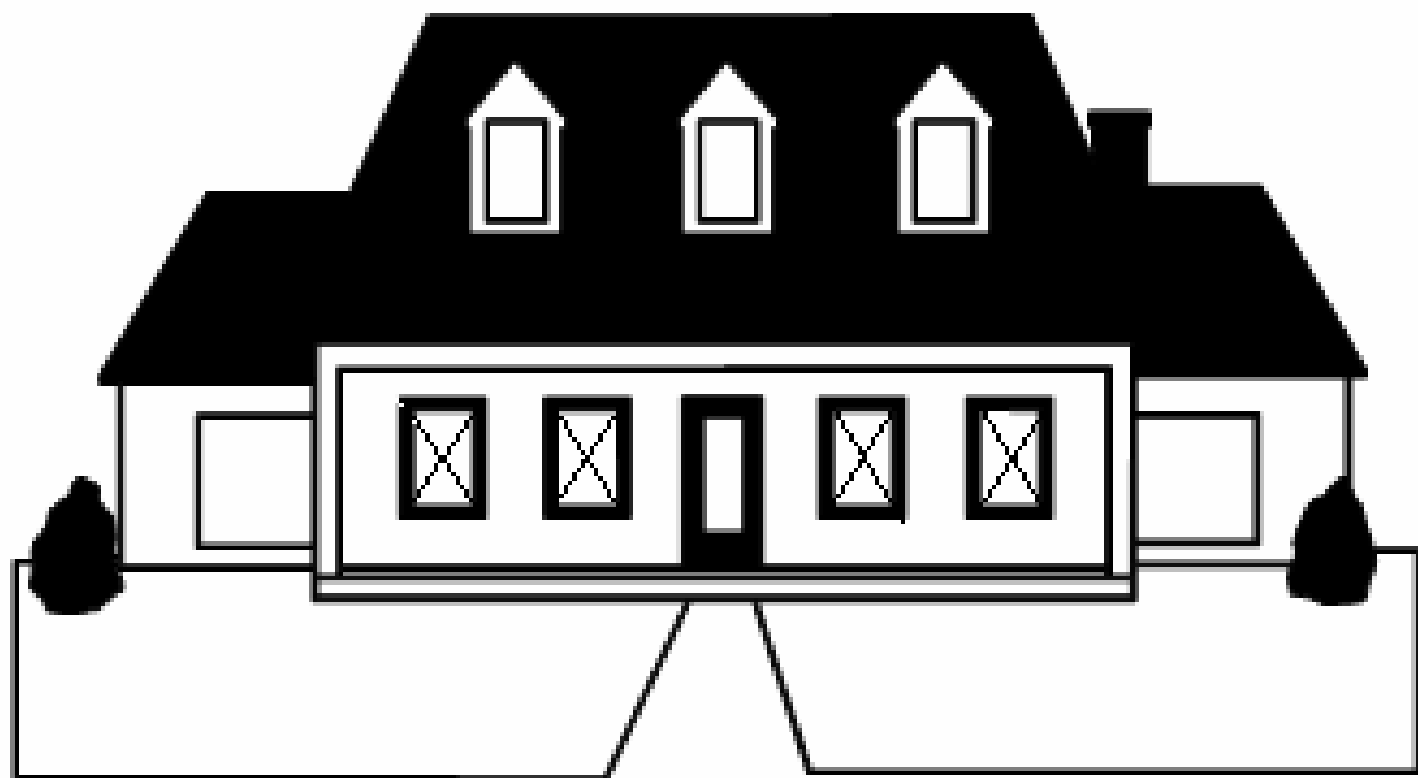
3. \_\_\_\_\_ Acute Angle

4. Circle all of the acute angles below:

5. If you hit a ball at an angle of  $91^\circ$  degrees, is it acute? YES or NO6. If you hit a ball at an angle of  $75^\circ$  degrees, is it obtuse? YES or NO

7. Find and label :

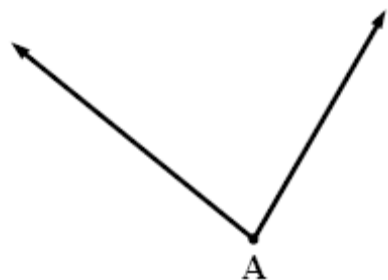
- 2 acute angles
- 2 right angles
- 2 obtuse angles



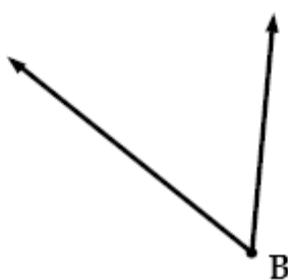
# Sorting Angles Paper

Directions: Cut out on the dotted line and sort/classify the angles.

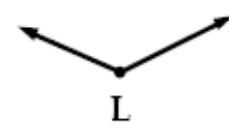
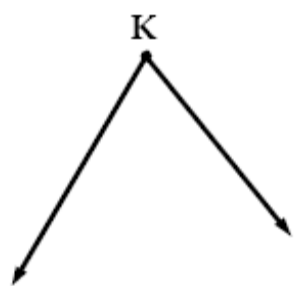
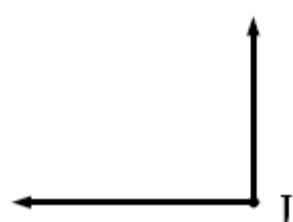
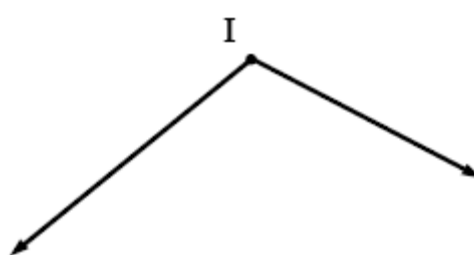
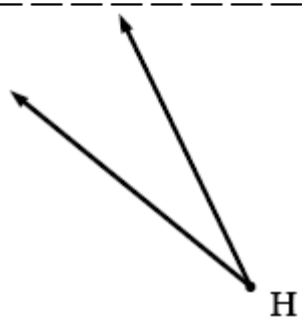
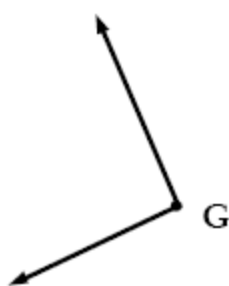
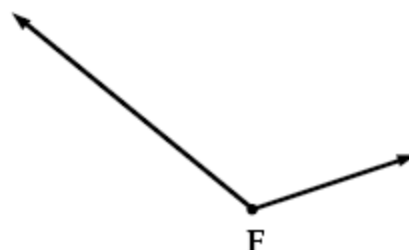
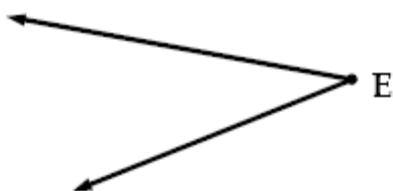
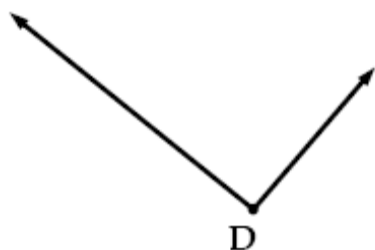
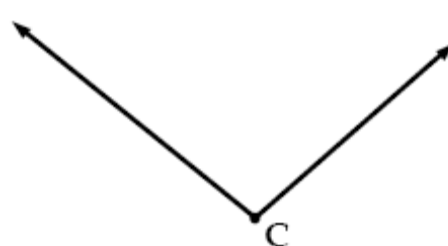
Acute  
Angles



Obtuse  
Angles

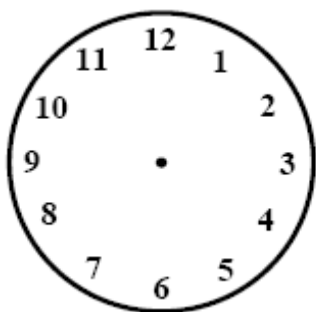


Right  
Angles



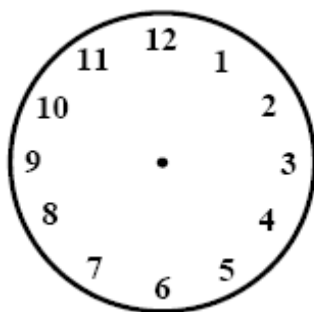
# Clock Angles

Directions: Record the time and type of angle in the space provided.



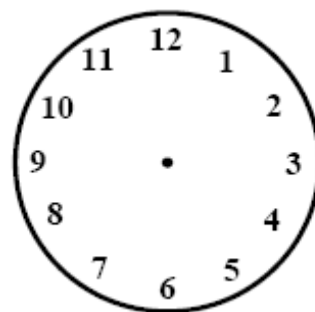
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



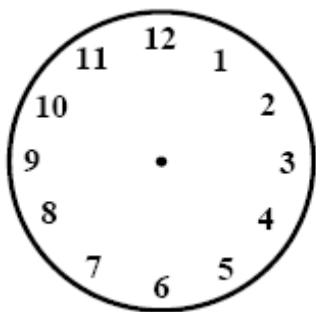
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



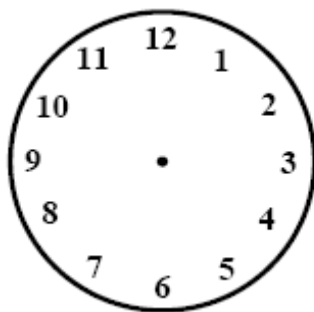
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



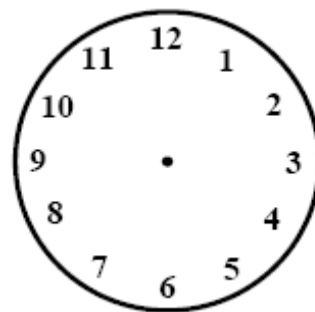
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



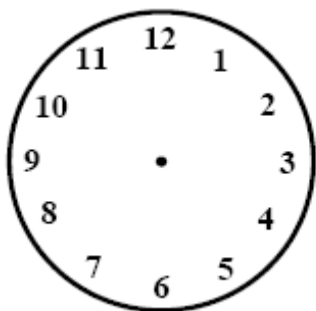
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



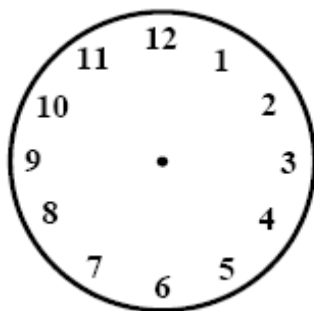
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



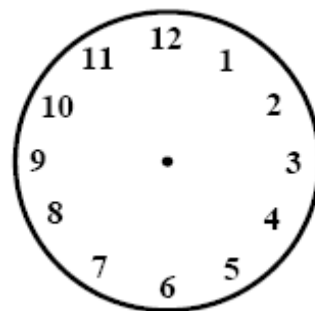
**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_



**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_

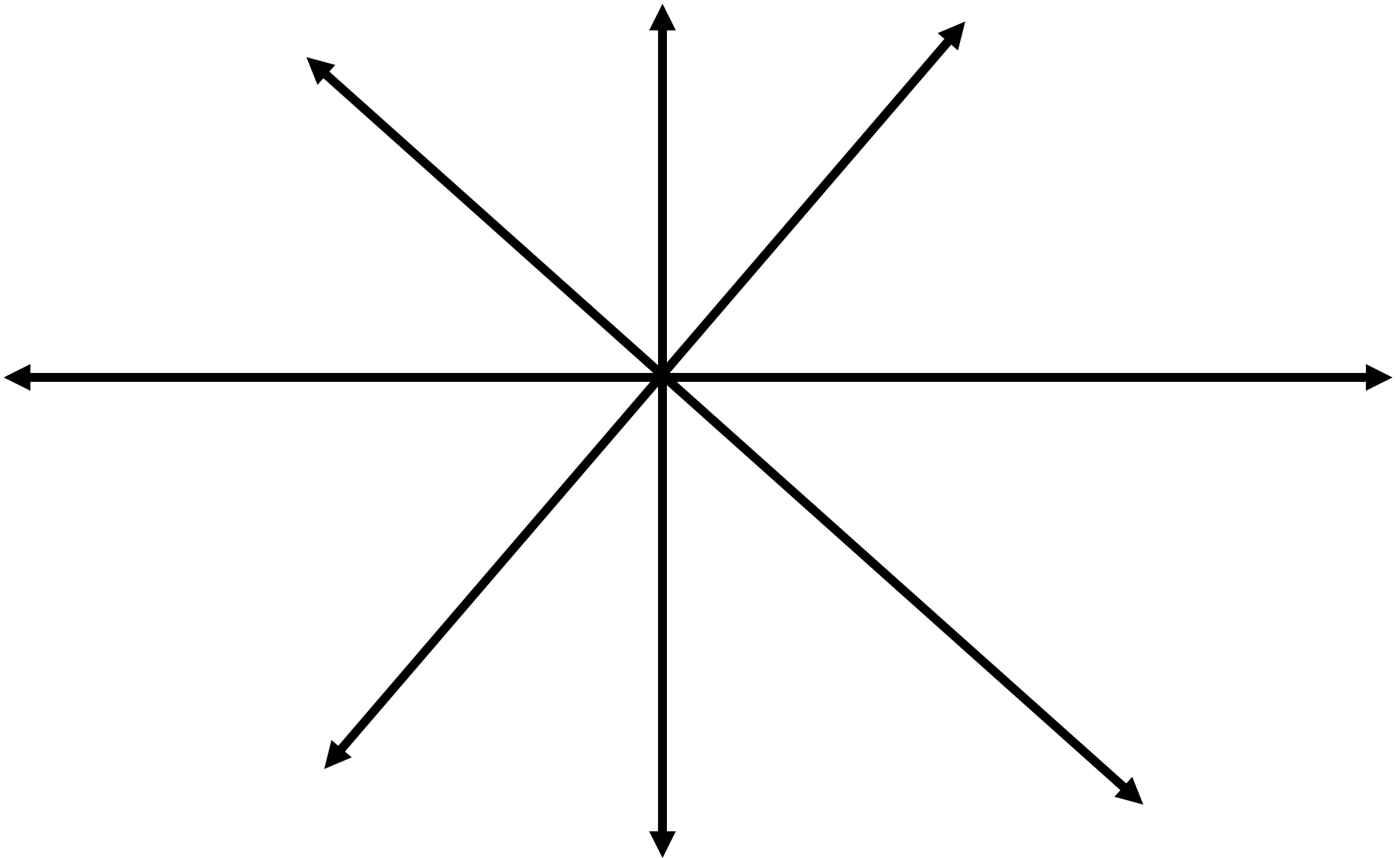


**Time** \_\_\_\_: \_\_\_\_

**Angle** \_\_\_\_\_

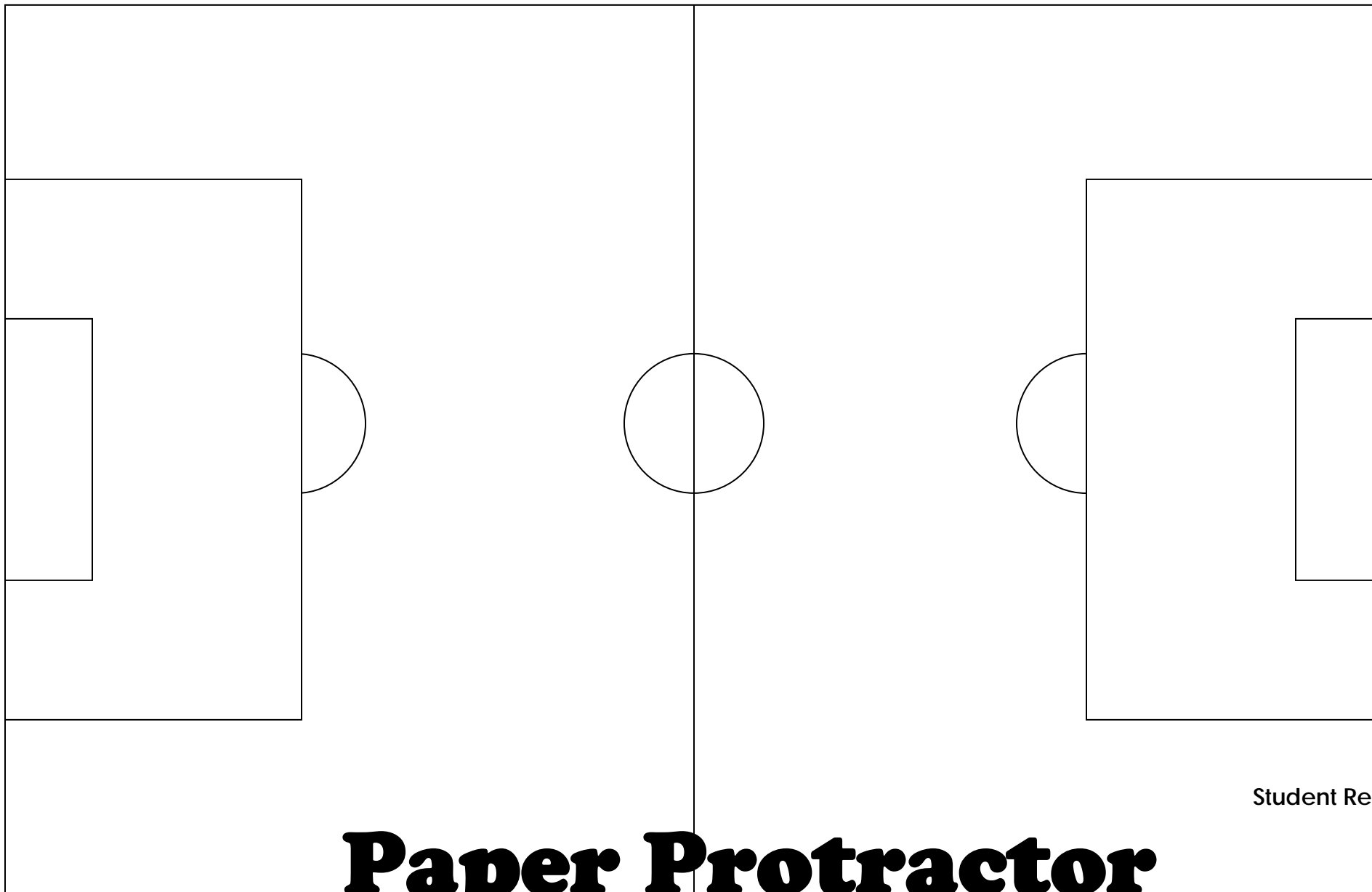
# How Many Do You See?

Directions: How many acute angles, obtuse angles, and straight angles do you see below? Remember you can use each ray more than once for more than one angle.





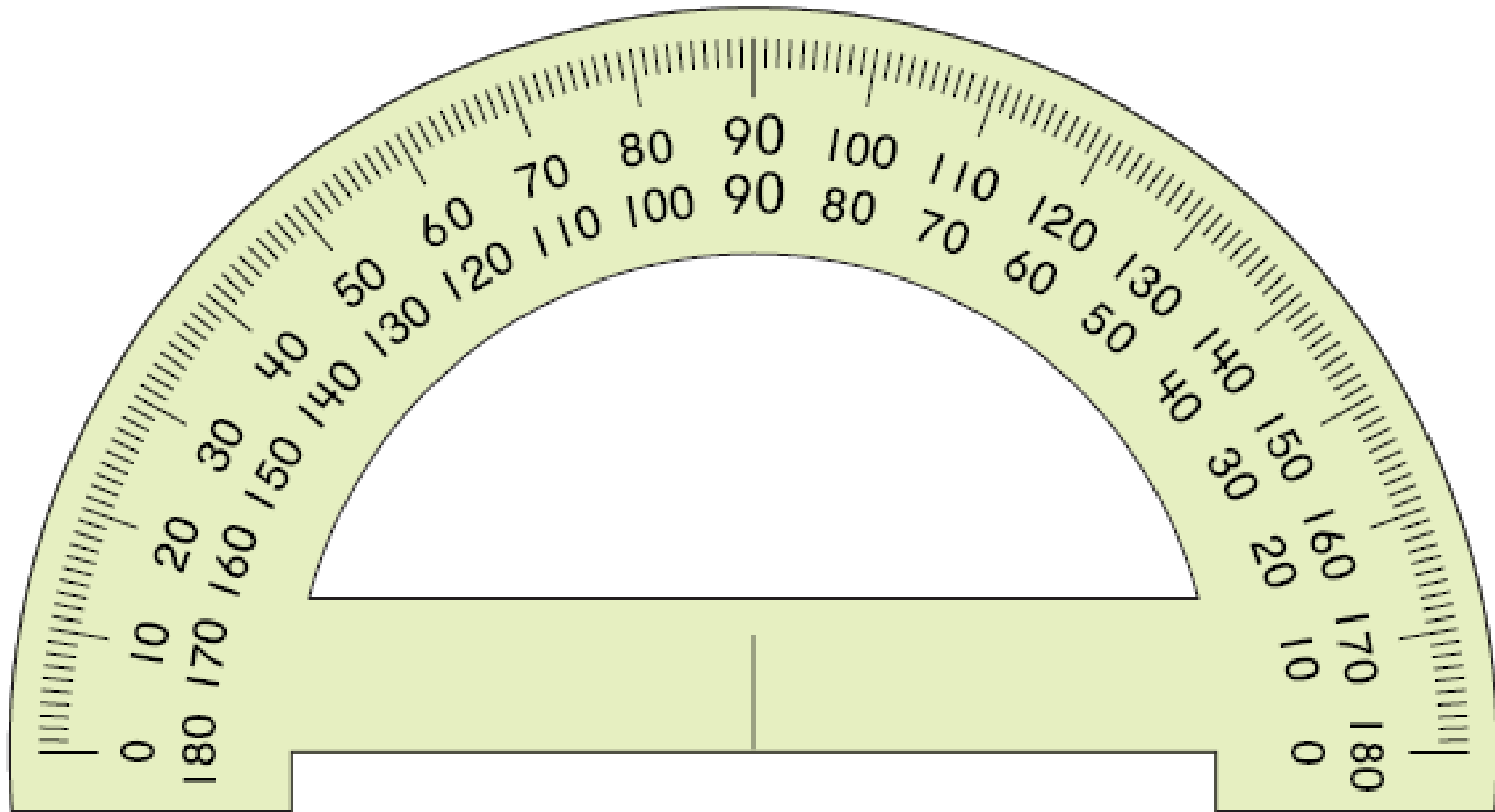
# Right Angle Soccer Search



Student Resource 6

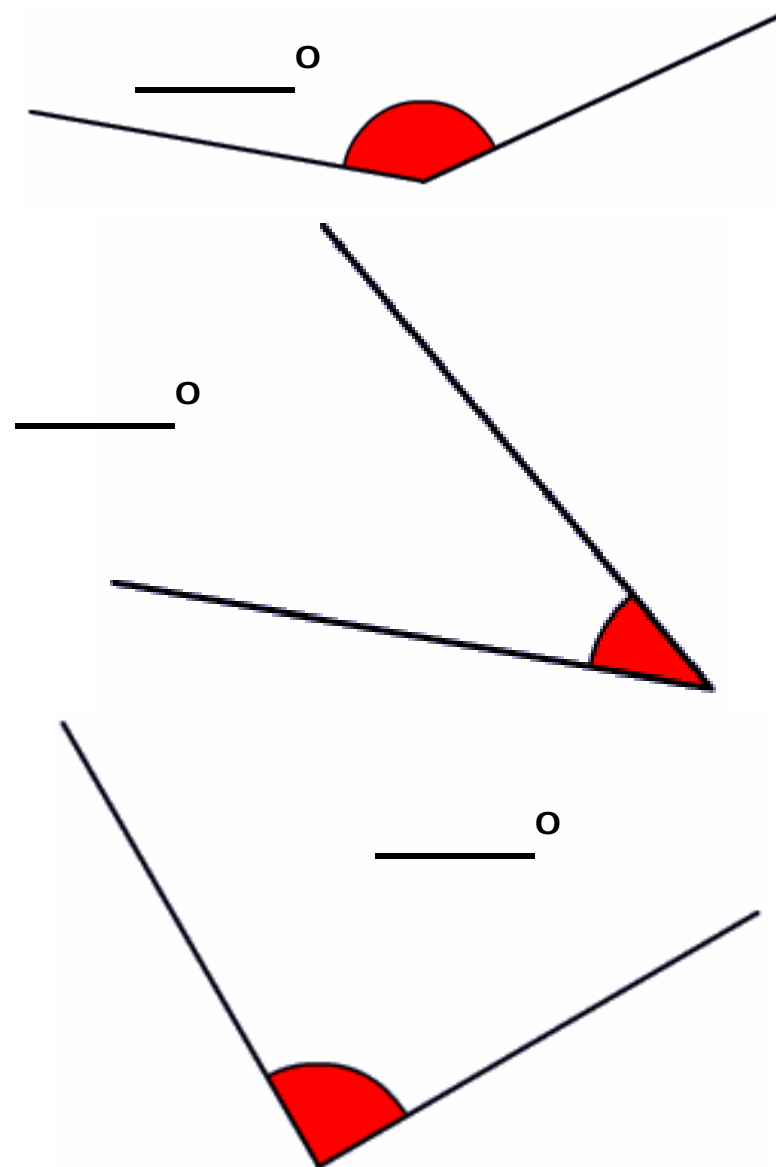
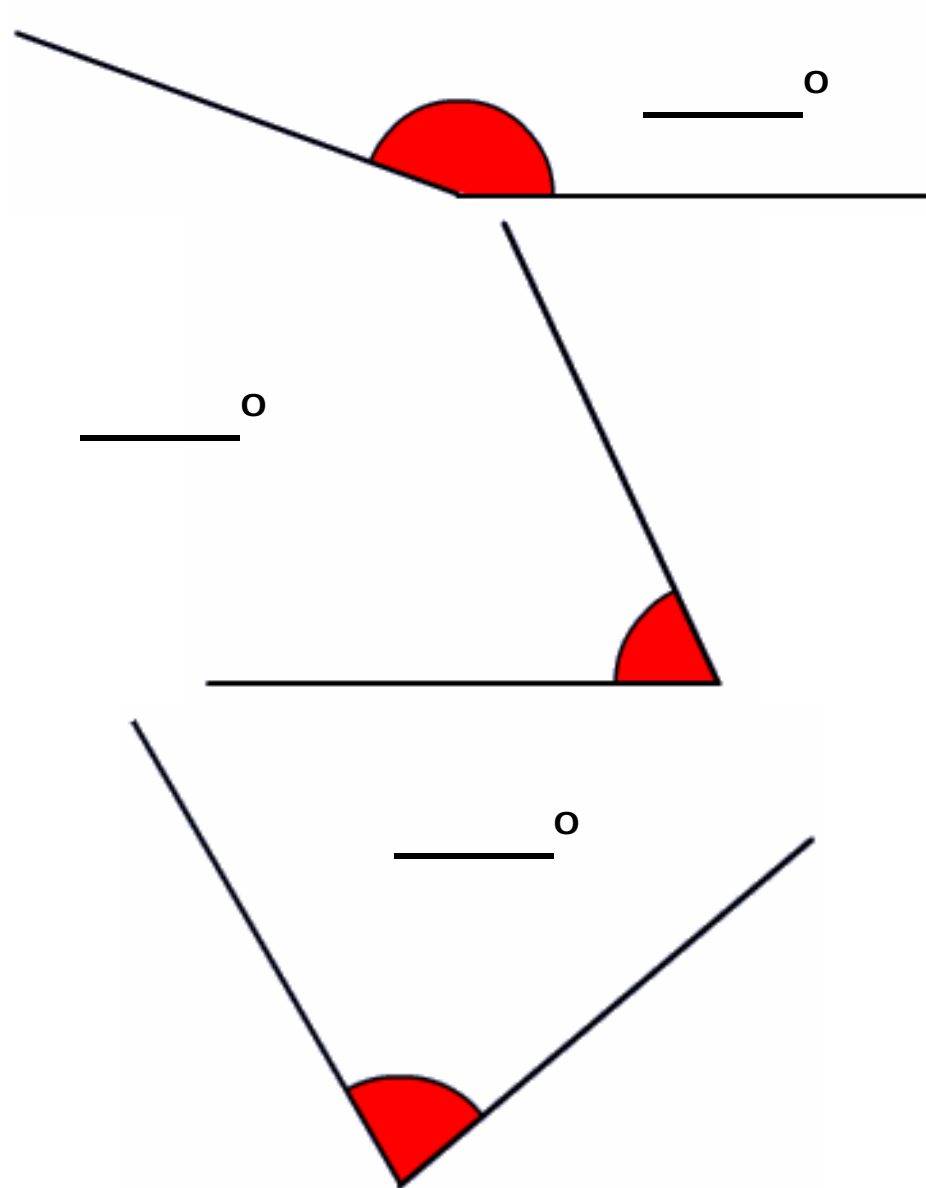
# Paper Protractor

Directions: Carefully observe the protractor. Record, label, or circle any observation that you can make.

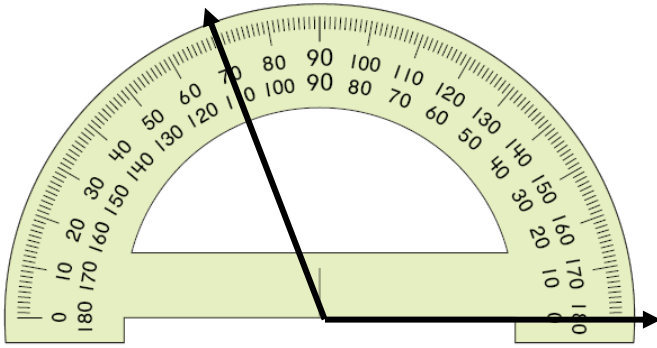


Student Resource 7

## **Measuring Angles with a Protractor**

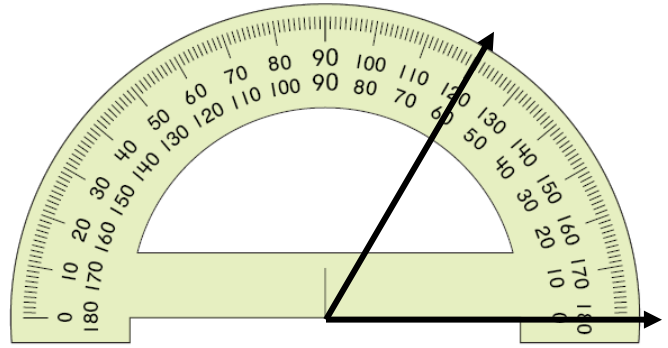


# Measuring Angles with a Protractor



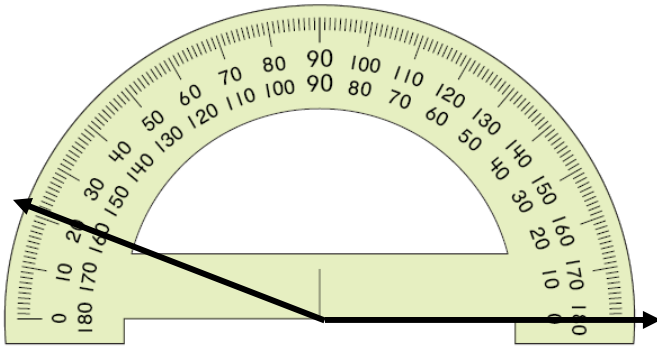
Measure of Angle \_\_\_\_\_

Type of Angle \_\_\_\_\_



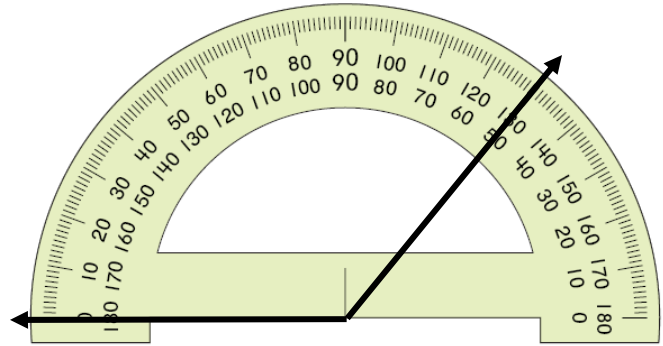
Measure of Angle \_\_\_\_\_

Type of Angle \_\_\_\_\_



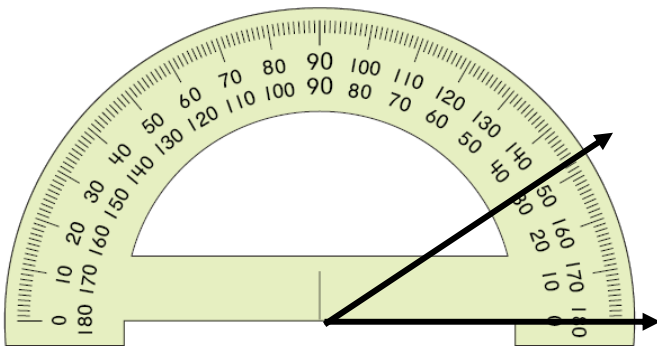
Measure of Angle \_\_\_\_\_

Type of Angle \_\_\_\_\_



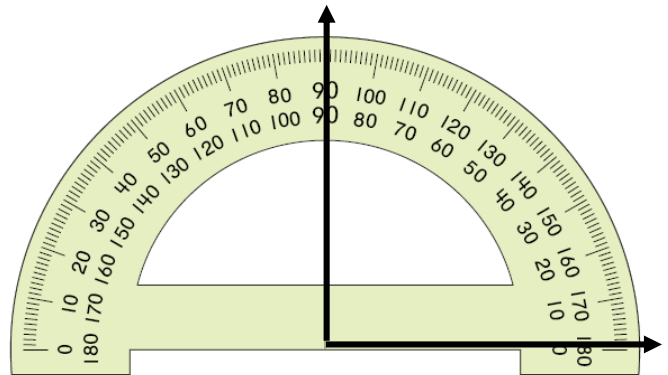
Measure of Angle \_\_\_\_\_

Type of Angle \_\_\_\_\_



Measure of Angle \_\_\_\_\_

Type of Angle \_\_\_\_\_

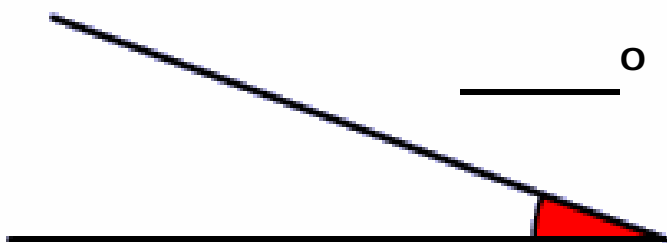


Measure of Angle \_\_\_\_\_

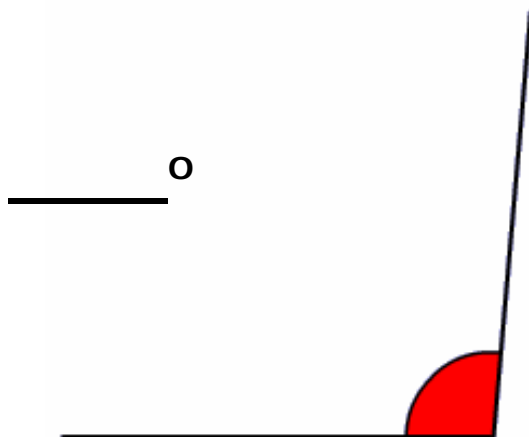
Type of Angle \_\_\_\_\_

## Protractor Entry Pass

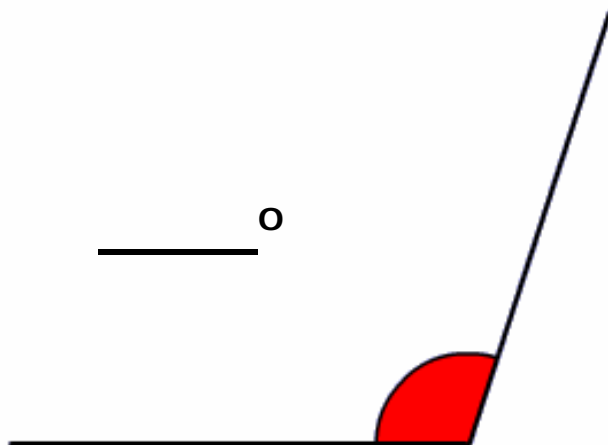
1.



2.

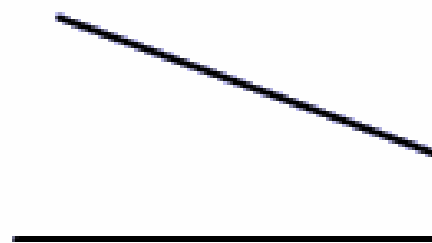


3.

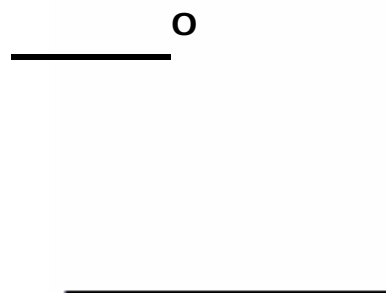


## Protractor Entry Pass

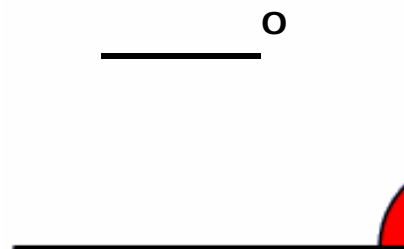
1.



2.



3.



Student Resource 10

# Angles on the Internet

Find your level. Complete the activities in the order they appear. Look below and read the directions and activities that you must complete. Complete the activities on a blank piece of paper.

Tier One

Tier Two

<ul style="list-style-type: none"> <li>• <a href="#">Guess the Random Angle</a> (A)</li> <li>• <a href="#">Show the Angle</a> (B)</li> <li>• <a href="#">Hitting the Target</a> (C)</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Cyber Chase – Stargazing</a> (D)</li> <li>• <a href="#">Banana Hunt Game</a> (E)</li> <li>• <a href="#">Kung Fu Angles</a> (F)</li> </ul>
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### Tier One Activities

#### A. Guess the Random Angle

<http://www.crickweb.co.uk/assets/resources/flash.php?&file=angle>

- Select the Random Either button under the Random Angle Generator title.
- The angle will appear on the protractor.
- Make sure “Num Lock” is activated and use the keypad to type in your angle estimate.
- Check your answer by selecting the round check button.

#### B. Show the Angle

<http://www.amblesideprimary.com/ambleweb/mentalmaths/protractor.html>

- Use the arrows to create 3 acute and 3 obtuse angles.
- Draw each angle and record the measurement in degrees.

#### C. Hitting the Target

<http://www.hittingthetarget.com/hittingthetarget.php>

Learn about angles through sports:

- In the football section you will learn about right angles.
- In the tennis section you will learn about acute angles.
- In the cricket section you will learn about obtuse angles.
- Keep score at quiz time of how many you have correct and incorrect.

#### D. Cyber Chase – Star Gazing

<http://pbskids.org/cyberchase/games/anglemeasurement/anglemeasurement.html>

- Help Digit fill his scrapbook by pointing his telescope to each planet in the night sky.
- Be sure to complete this before the sun comes up.
- How did you determine where the telescope should go?
- Did your accuracy improve over time? Why or why not?

### Tier Two Activities

#### E. Banana Hunt Game

<http://www.oswego.org/ocsd-web/games/bananahunt/bhunt.html>

- Try and find where the banana is located by dragging the monkey to where you think the bananas are located
- You receive more points for accuracy.
- Describe how your strategy as you played the game and how you knew your answer was close or not.

#### F. Kung Fu Angles

<http://www.bbc.co.uk/keyskills/flash/kfa/kfa.shtml>

- Turn your body so that you can defend yourself from the attacker. Each shaded part of the circle, are ten degrees. There are 36 sections, because there is 360 degrees in a circle.
- How are the angles of a circle and the angles of a protractor different?

### Extra Support

G. Hitting the Target: Snooker Game

<http://www.hittingthetarget.com/hittingthetarget.php>

- In this section, you will go through a tutorial that reinforces how to use a protractor to measure angles.
- Once you are through the tutorial, you will practice measuring angles in a real world experience.

### Enrichment

H. Burst the Balloons: Clown Cars

<http://www.lgfl.net/lgfl/leas/haringey/web/teachers%20section/KS2/ICT/Links%20&%20Resources/documents/clowns.swf>

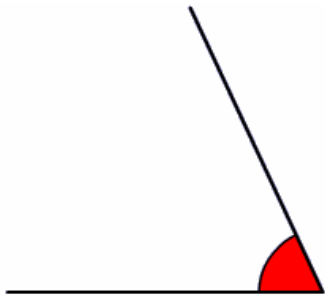
- In this game you drive a car trying to burst as many balloons to earn points using angles to drive the car.



# Angles Post-Assessment

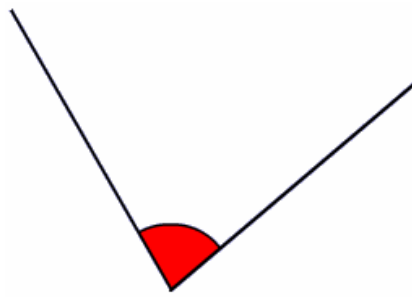
Directions: Circle the name of the type of angle below.

1.



Right  
Acute  
Obtuse  
Straight

2.



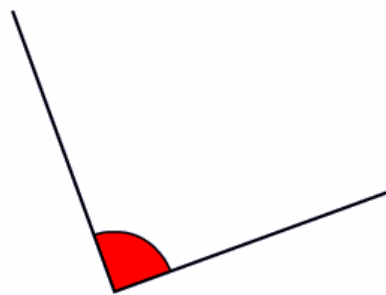
Right  
Acute  
Obtuse  
Straight

3.



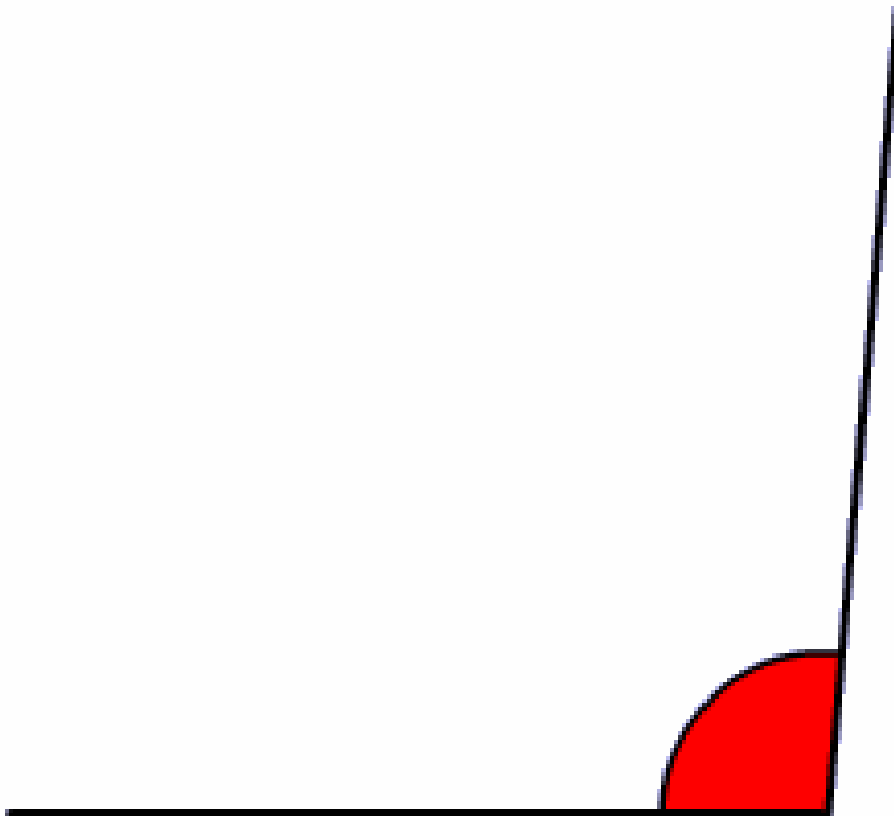
Right  
Acute  
Obtuse  
Straight

4.

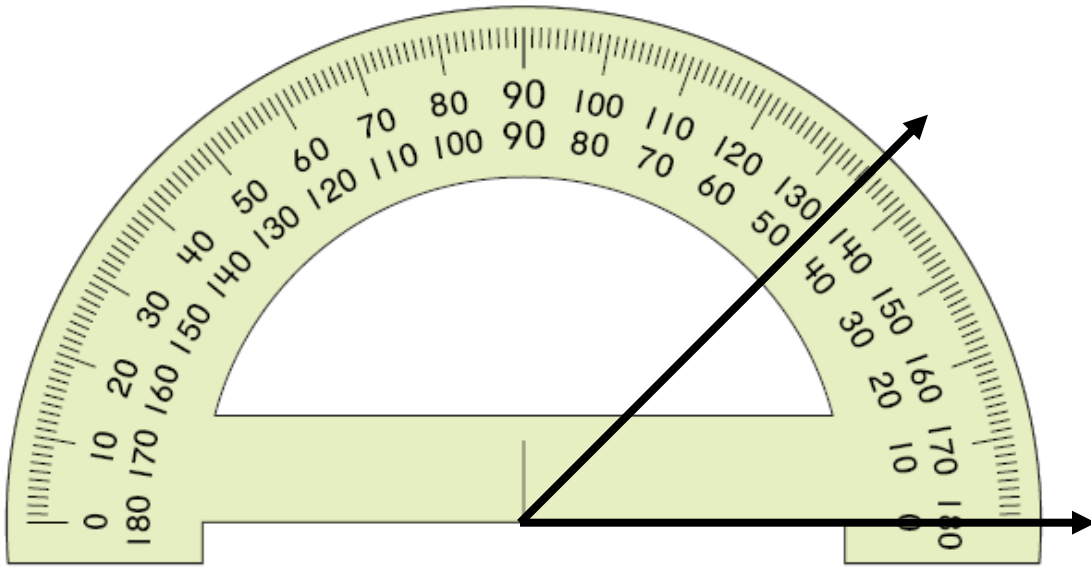


Right  
Acute  
Obtuse  
Straight

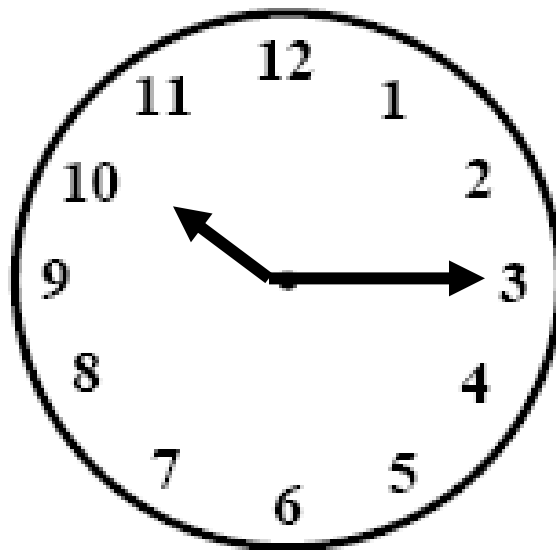
5. Measure the angle below with a protractor.



6. Use the protractor below to measure the angle.



7. What type of angle is shown on the clock?

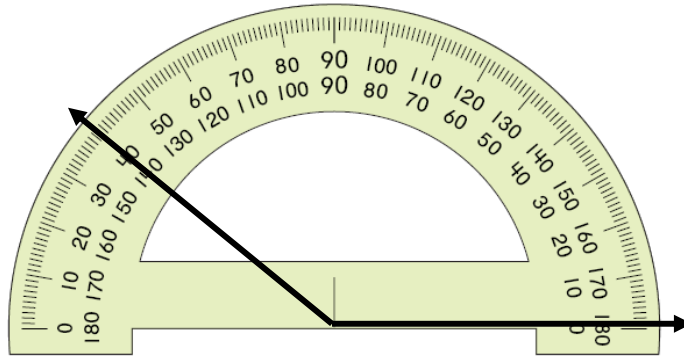


The angle on the clock is a \_\_\_\_\_ angle.

## Angles BCR

Step A:

Sally thinks the angle below measures forty degrees. Is Sally correct?



YES or NO

Step B:

Explain why your answer is correct. Use what you know about angles in your explanation. Use words, numbers, and/or symbols in your explanation.

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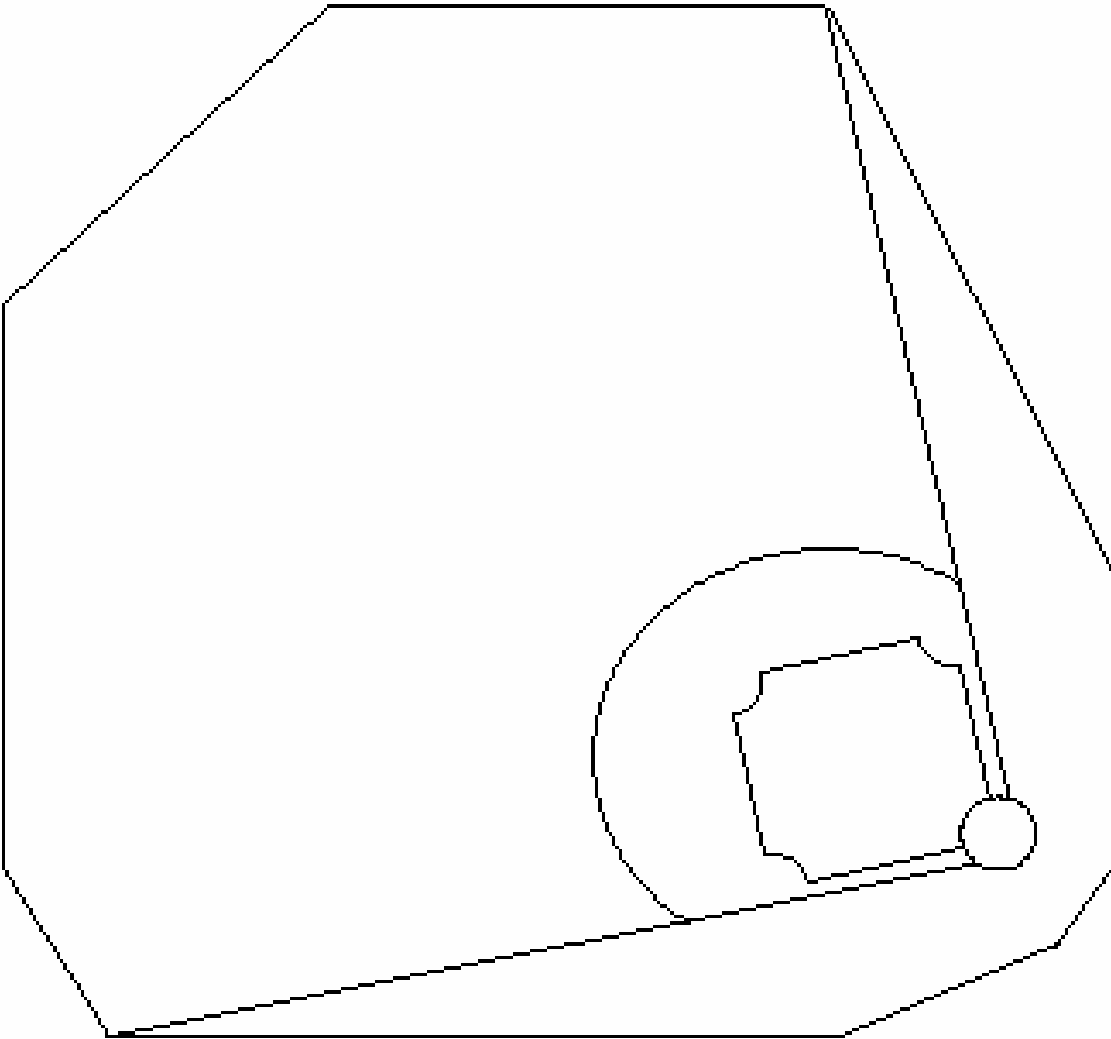
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# **Baseball Angle Search**

Directions: Trace ACUTE angles that you find in BLUE and OBTUSE angles in RED.



Key:

☐ Obtuse Angles

☐ Acute Angles

How many acute angles can you find?

How many obtuse angles can you find?

# Angles Pre-Assessment

Name \_\_\_\_\_ Date \_\_\_\_\_

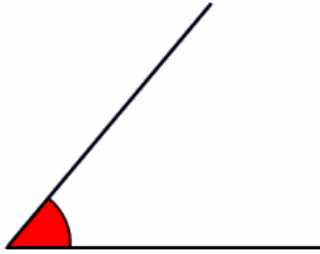
Directions: Match the picture of the angle with the name

A.



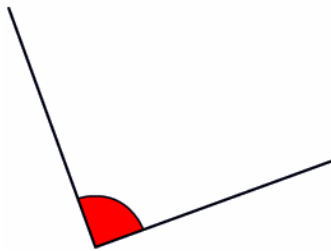
1. C Right Angle

B.



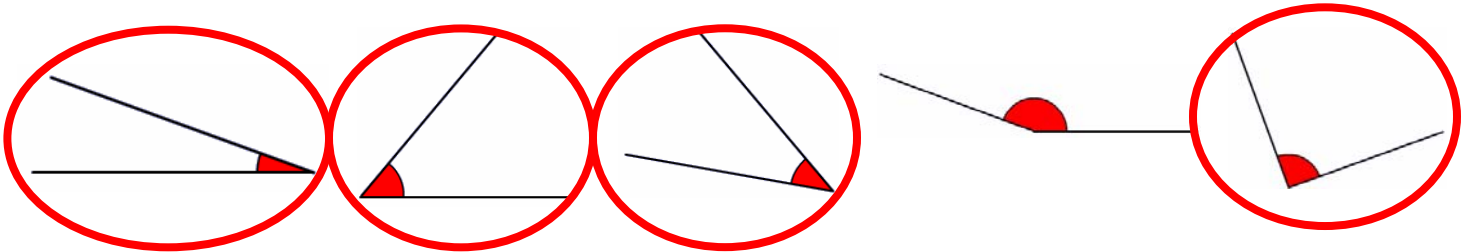
2. A Obtuse Angle

C.



3. B Acute Angle

4. Circle all of the acute angles below:

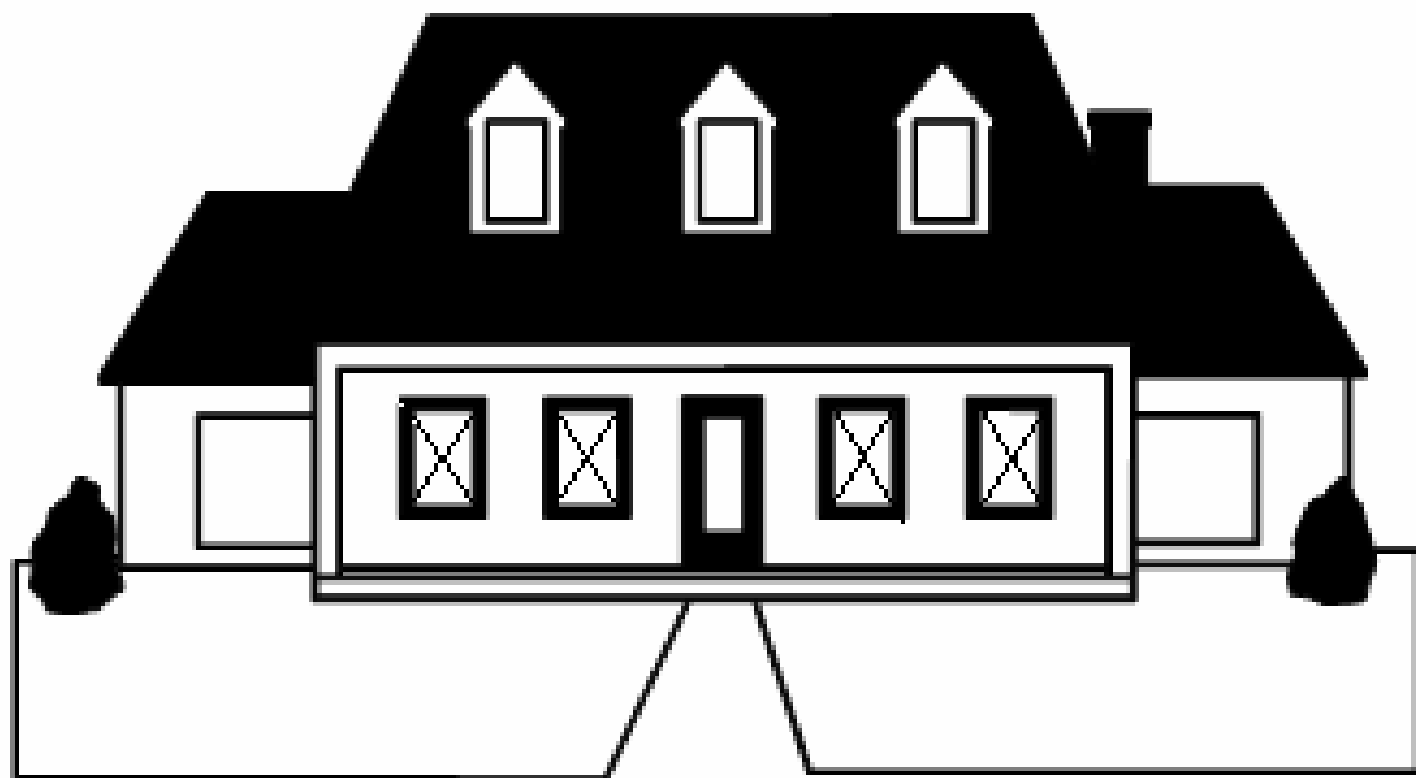


5. If you hit a ball at an angle of  $91^\circ$  degrees, is it acute? YES or **NO**

6. If you hit a ball at an angle of  $75^\circ$  degrees, is it obtuse? YES or **NO**

7. Find and label : **Students should find at least two of each angle**

- 2 acute angles
- 2 right angles
- 2 obtuse angles



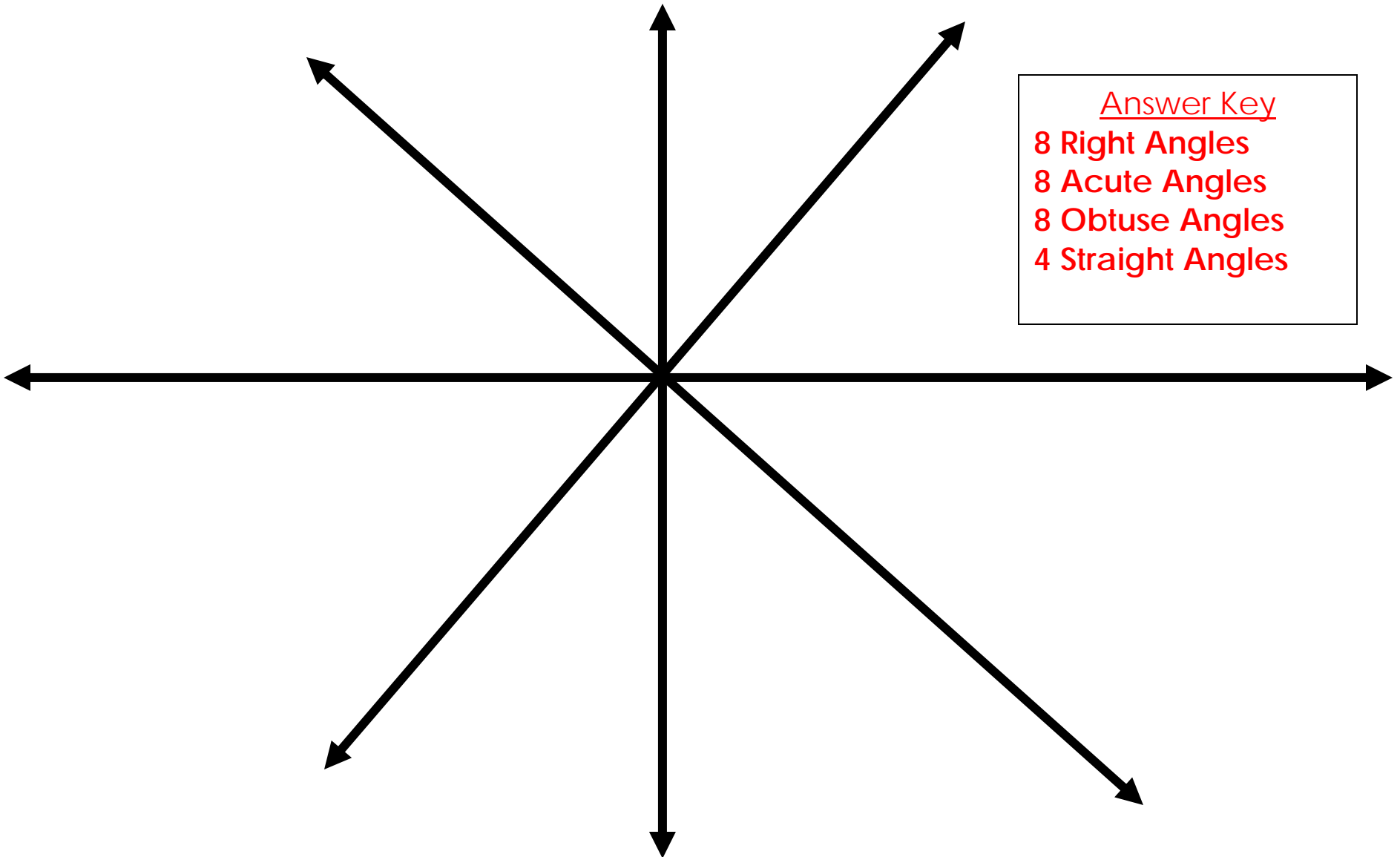
# **Sorting Angles Paper Answer Key**

Directions: Cut out on the dotted line and sort/classify the angles.

Acute Angles	Obtuse Angles	Right Angles
A B E H K	C F I L	D G J

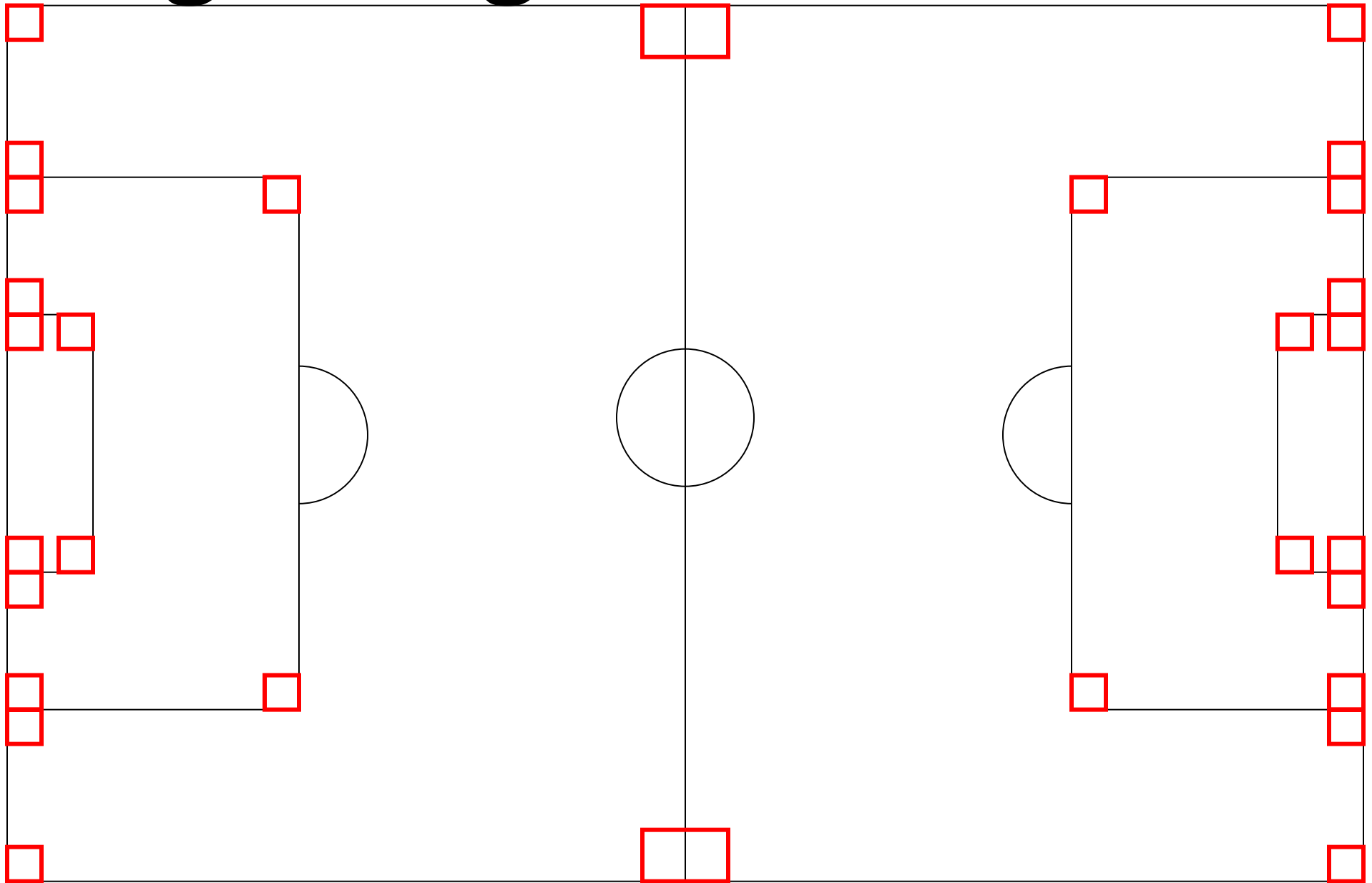
# How Many Do You See? Answer Key

Directions: How many acute angles, obtuse angles, right angles, and straight angles do you see below?  
Remember you can use each ray more than once for more than one angle.

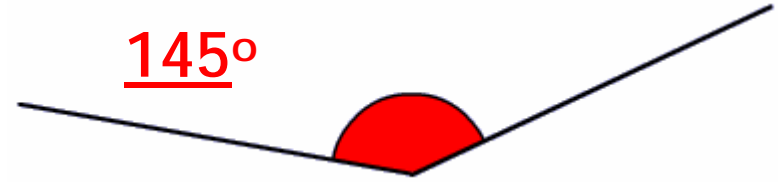




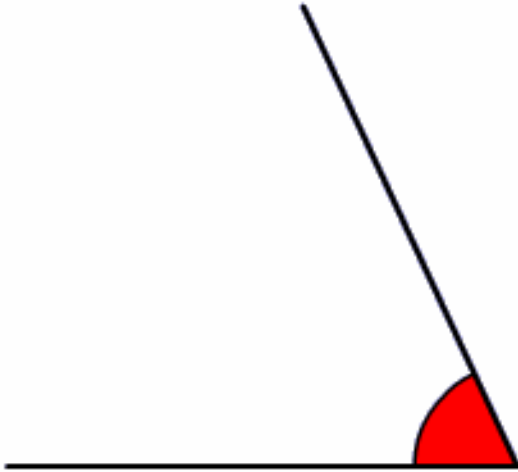
# Right Angle Soccer Search



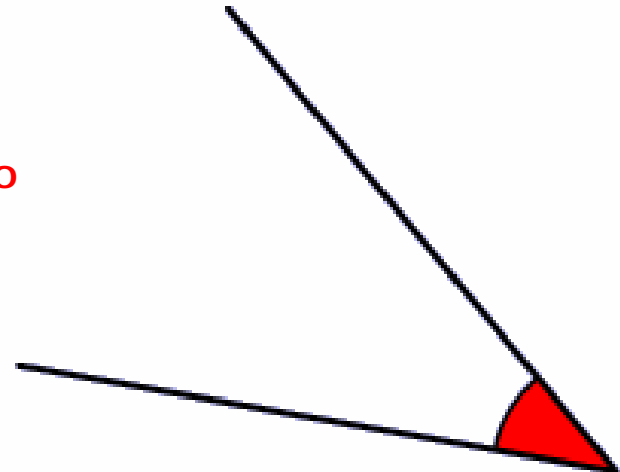
# Measuring Angles with a Protractor



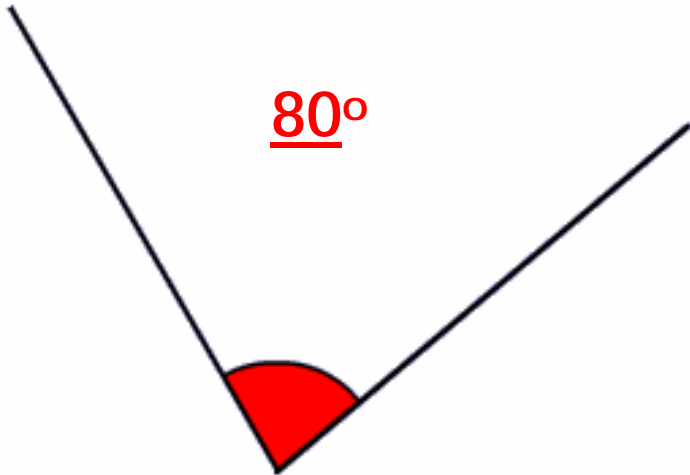
$65^\circ$



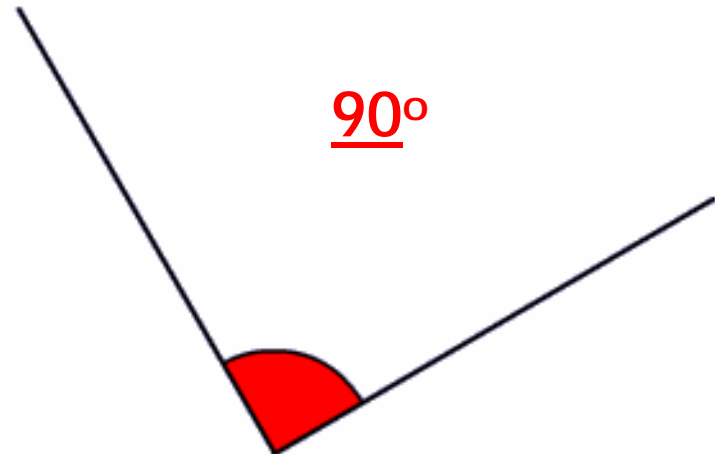
$40^\circ$



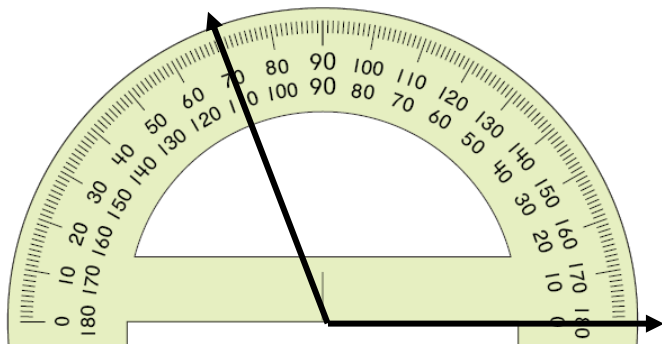
$80^\circ$



$90^\circ$

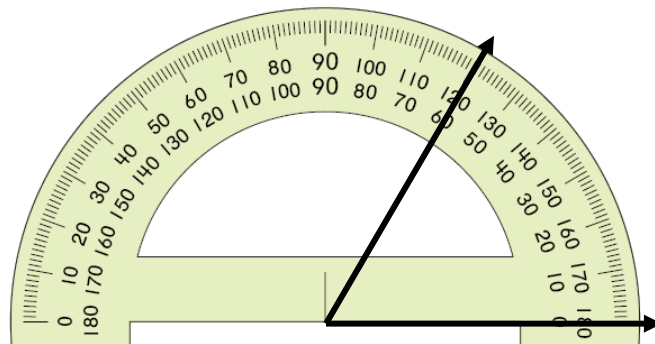


# Measuring Angles with a Protractor



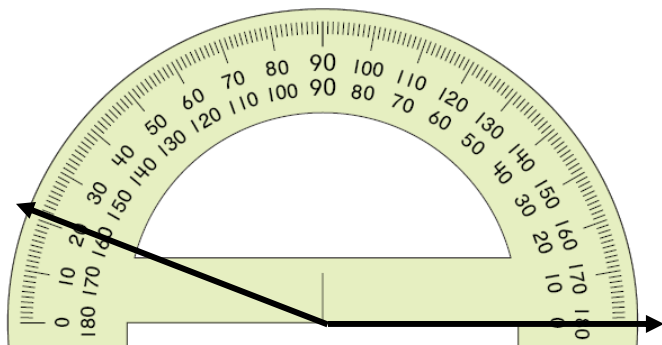
Measure of Angle 110°

Type of Angle Obtuse



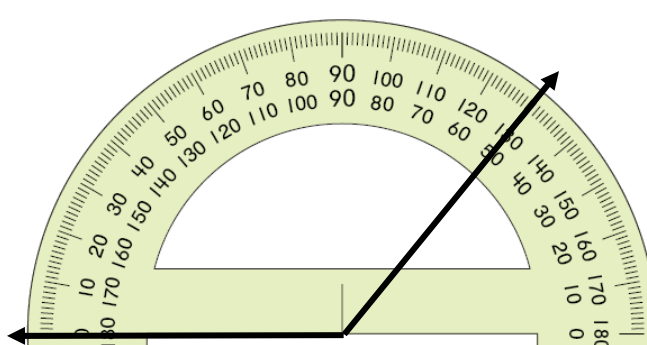
Measure of Angle 60°

Type of Angle Acute



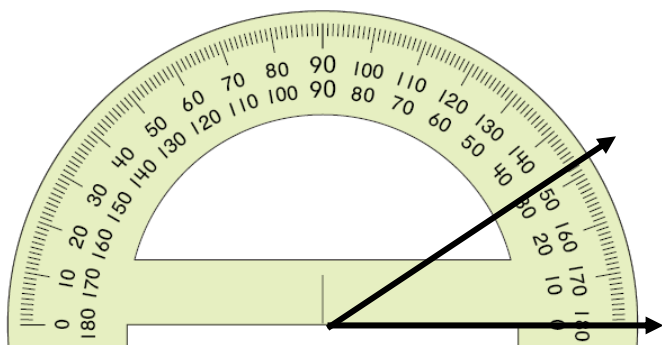
Measure of Angle 160°

Type of Angle Obtuse



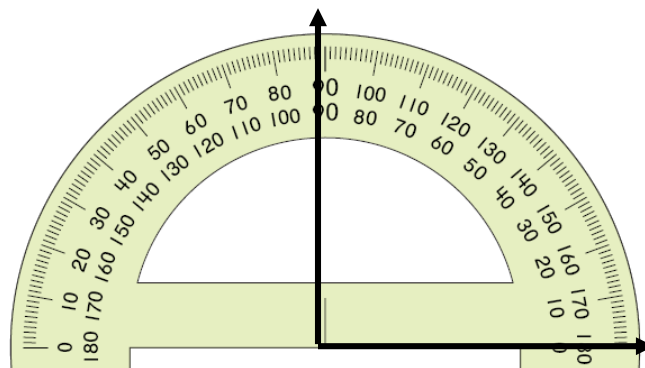
Measure of Angle 130°

Type of Angle Obtuse



Measure of Angle 30°

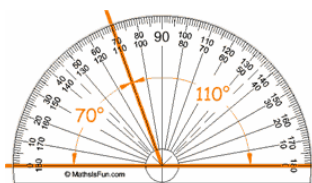
Type of Angle Acute



Measure of Angle 90°

Type of Angle Right

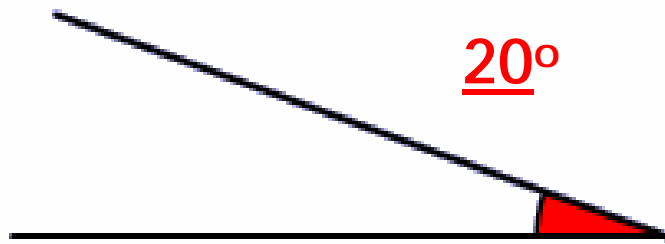
# Steps to Measuring with a Protractor



1. Find the vertex on the straight edge of the protractor.
2. Place the hole, or vertex in the middle of the straight edge on the protractor, over the vertex of the angle you are measuring.
3. Line up the zero on the straight edge of the protractor with one of the sides of the angle.
4. Find the place where the second side of the angle intersects the curved edge of the protractor.
5. Using the point of the sharpened pencil, pull the rubber band to a point on the edge of the second side of the angle (or use the AngLeg on the protractor).
6. Read the number that is written on the protractor at the point where the rubber band (or AngLeg) crosses the protractor. Be sure to start from zero and skip count by 10's, then 5's. This is the measure of the angle in degrees (to the nearest 5).

# Protractor Entry Pass Answer Key

**1.**



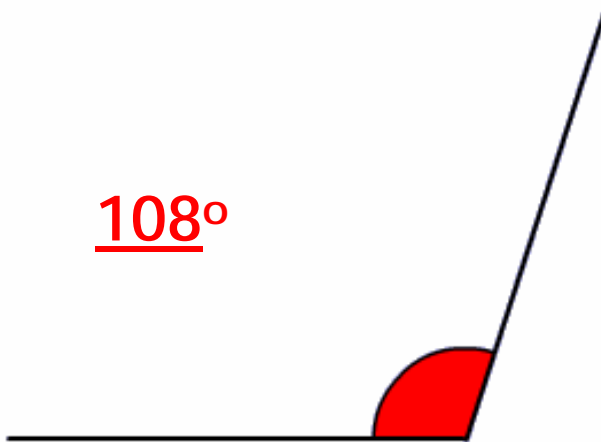
**2.**

95°



**3.**

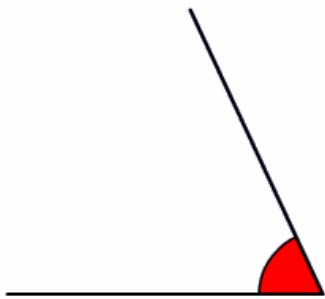
108°



# Angles Post-Assessment

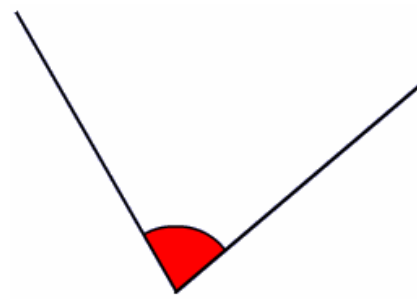
Directions: Circle the name of the type of angle below.

1.



Right  
Acute  
Obtuse  
Straight

2.



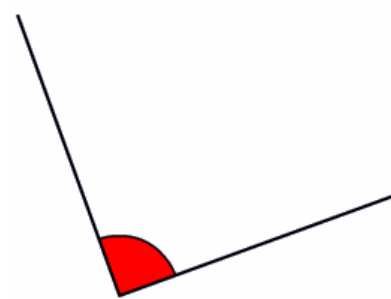
Right  
Acute  
Obtuse  
Straight

3.



Right  
Acute  
Obtuse  
Straight

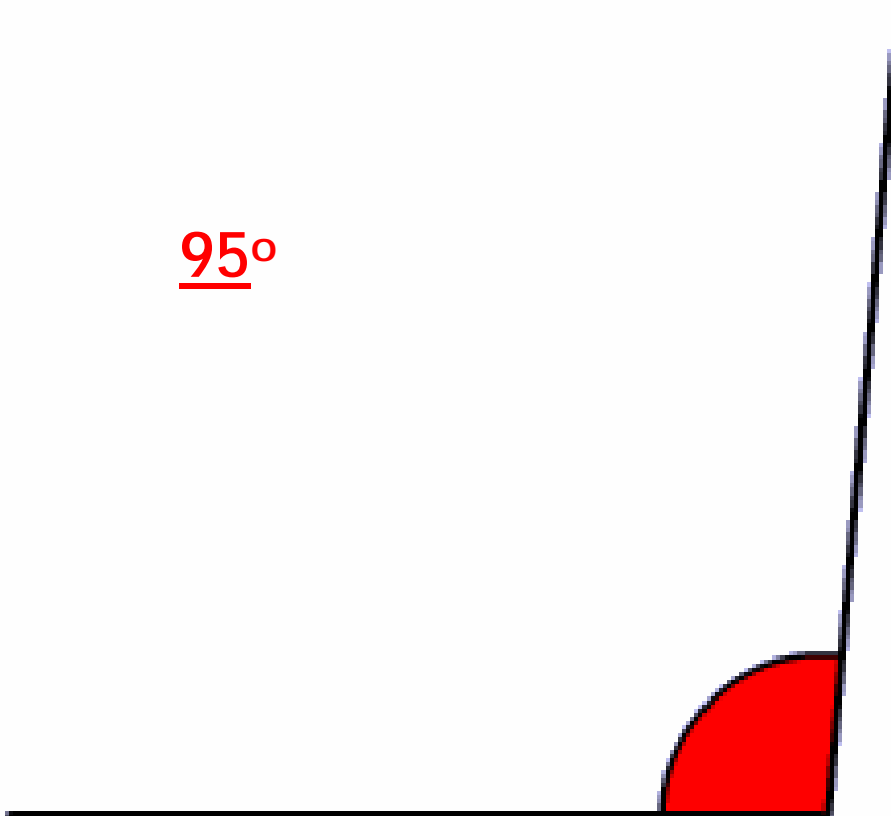
4.



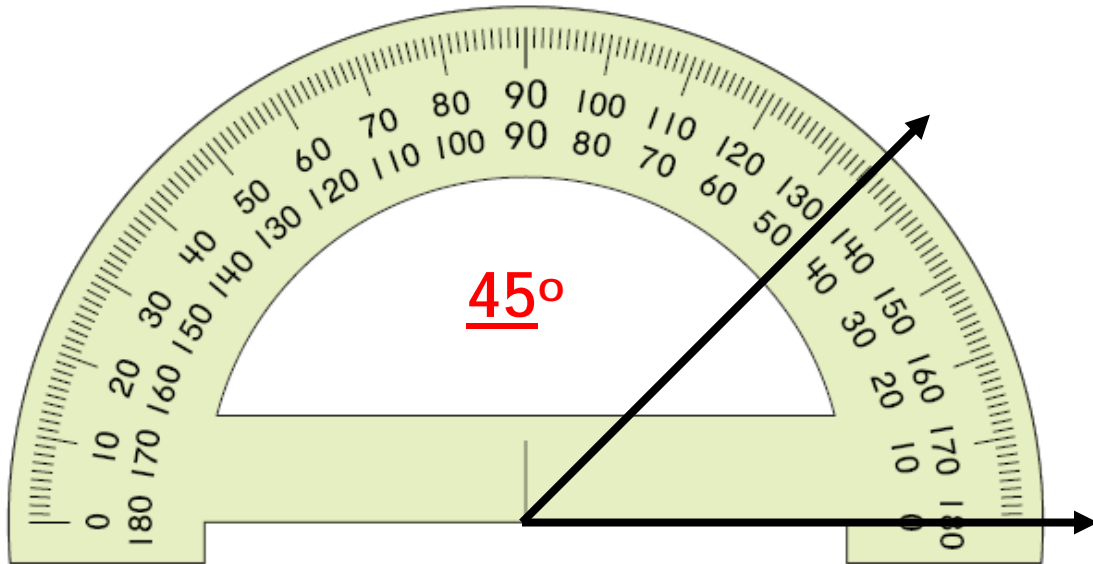
Right  
Acute  
Obtuse  
Straight

5. Measure the angle below with a protractor.

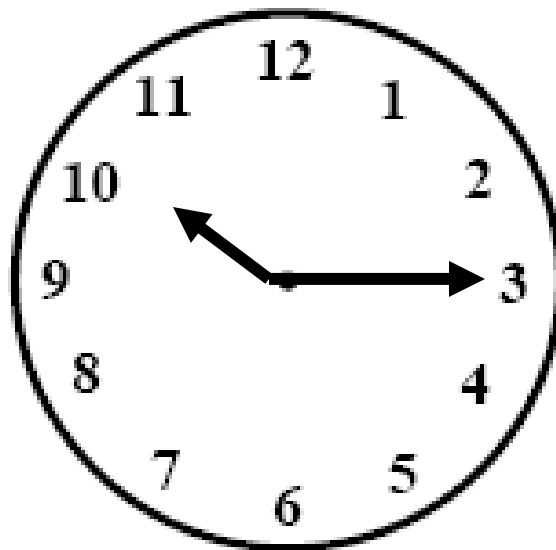
95°



6. Use the protractor below to measure the angle.



7. What type of angle is shown on the clock?

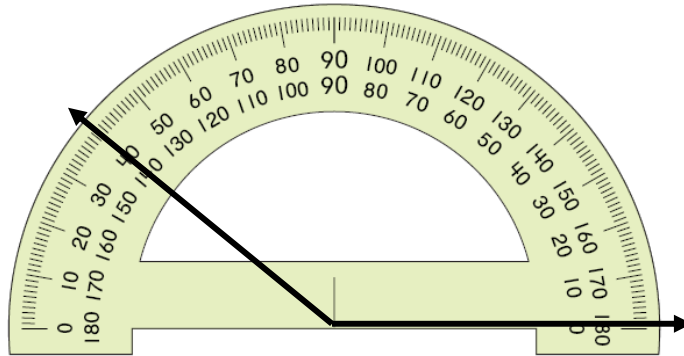


The angle on the clock is an obtuse angle

## Angles BCR

Step A:

Sally thinks the angle below measures forty degrees. Is Sally correct?



YES or NO

Step B:

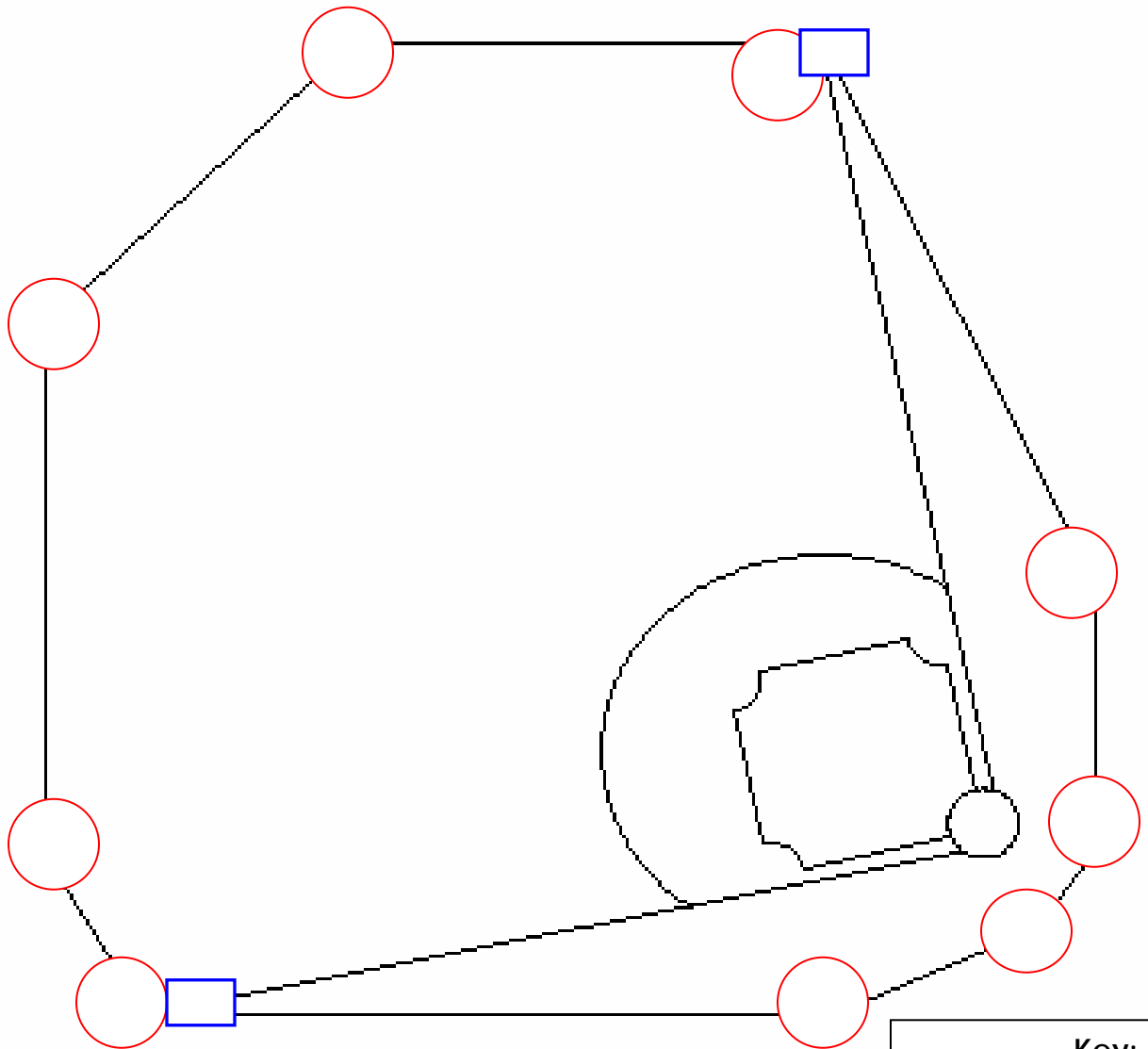
Explain why your answer is correct. Use what you know about angles in your explanation. Use words, numbers, and/or symbols in your explanation.

- Increases from right to left, counted by tens.
- It is an obtuse angle and forty degrees is not an acute angle.
- Forty degrees is what is left over to make a complete straight angle.



## Baseball Angle Search

Directions: **Trace** ACUTE angles that you find in BLUE and OBTUSE angles in RED.



Key:

### Obtuse Angles

☐ Acute Angles

How many acute angles can you find?

How many obtuse angles can you find?

2